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ABSTRACT

The S.A.C.K. Alignment Model integrates curriculum, instruction, and multiple assessments with the cultural and learning experiences of students. This model illustrates how prior cultural and learning experiences can be linked to state-mandated content and performance standards. S.A.C.K. is an acronym for skills, affects/attitudes, concepts, and knowledge. The model is based on students acquiring simple skills and progressing to more complex skills in each area. For example, students move from simple sets of sensory input to more complex emotions, from attitude formations developing from sensory input to more complex patterns of thought, from basic concepts related to the activity or topic to more sophisticated ideas, and from simple knowledge (rote memory) to more complex integrated learning. This process requires sensory input, processing, retrieval, and application. Applicable assessment techniques include scoring rubrics that require multiple levels of understanding, benchmarks that reflect progress toward meeting standards, and criteria that determine when standards have been met. To illustrate how this model works, the report describes the process involved in integrating a Native American cultural activity with required state curriculum content and standards. Teachers identified the processes required for making a grass basket and aligned their ideas with the four areas of the model: skills, affects/attitudes, concepts, and knowledge. The cultural activity was then linked to state content standards related to biology, science, and mathematics. Teachers selected appropriate teaching strategies and assessment techniques for the learning activity. Contains recommendations for implementing the model and tables representing how the grass basket making activity was integrated with curriculum standards. (LP)

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"Integrating Curriculum, Instruction and Assessment"

Presentation by Teresa A. Sappier, M.A.
Alaska Comprehensive Regional Assistance Center
for NIEA Conference
Rapid City, SD
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Introduction

The purpose of this presentation is to integrate the areas of study in a typical curriculum with the core subjects, instruction, and multiple assessments. Introduced here is the S.A.C.K. Alignment Model which will be used to illustrate an approach to align cultural and learning experiences. The S.A.C.K. Alignment Model will demonstrate to the participants how prior cultural experiences and learning experiences can be linked to State Content and Performance Standards.

Prior Experiences

Do you believe that children come to school with a whole body of knowledge? This body of information ranges from simple to complex skills, feelings/attitudes, concepts, and knowledge. Occasionally, a parent or teacher may comment on what a child says or does that was not a part of the experience that either adult has ever had with the child. Each of us can make a list of these kinds and types of examples. (Elicit a few examples from the audience.)

C-I-A: Curriculum-Instruction-Assessment

Fig. 1.0 Spiderweb

The "spiderweb" represents the thematic type of webbing (Hyerle, 1996) required in the construction of knowledge and prior experiences. Each strand along the "spiderweb" represents curriculum content areas. Each concentric circle represents instruction. And at each point of intersection is assessment. Each strand or content area contains within its boundaries interwoven pieces of instruction and assessment. In an analogy like the S.A.C.K. Alignment Model, curriculum-instruction and assessment are carefully interwoven or integrated. The nucleus of the "spiderweb" represents the learning process which can be divergent and/or convergent.

The analogy of the "spiderweb" helps one to see the interconnectedness of all three units, i.e., C-I-A. With the "spiderweb" in mind, the discussion begins with an explanation of the S.A.C.K. Alignment Model and how it links content areas, drives instruction, and forms assessment. The S.A.C.K. Alignment Model is dynamic because it is not hierarchical, it is not a theory, and it is limitless as a learning model in its possibilities across curriculum.

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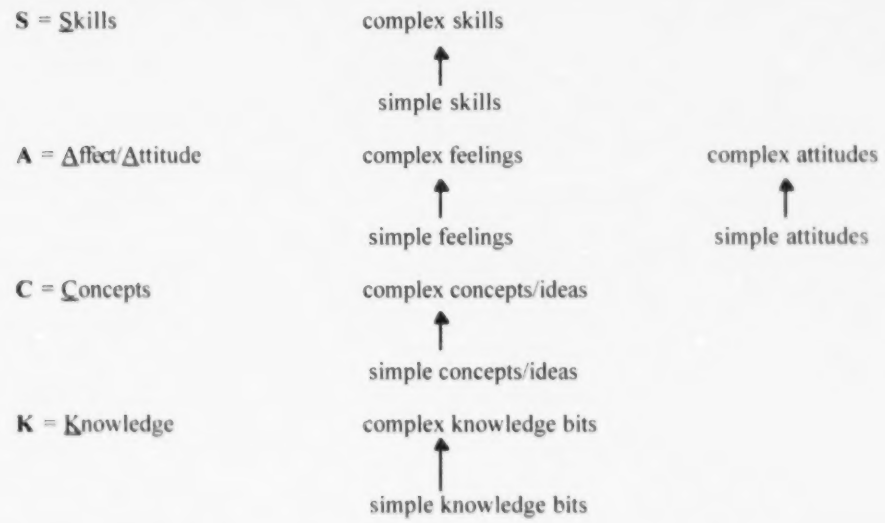
The S.A.C.K. Alignment Model

S.A.C.K. is an acronym for: skills; affects/attitudes; concepts; and knowledge. It is termed an "alignment model" because it arranges and calibrates information into four areas, i.e., skills, affects/attitudes, concepts, and knowledge, obtained from prior learning experiences in and out of school. Using the S.A.C.K. Alignment Model allows educators to connect students' experiences with curriculum content and to create measurable learning experiences, while the instruction component takes on an interdisciplinary framework.

As an ecological learning and curriculum development model that incorporates prior learning and understanding, the process involves breaking down information into a structure that ranges from simple knowledge to complex knowledge.

Fig 2.0 S.A.C.K. Alignment Model



As a restructuring model, the S.A.C.K. Alignment Model may be viewed as a method to construct and integrate the school's curriculum with student and community culture and language by processing each aspect, i.e., skills, affects/attitudes, concepts, and knowledge, with the teacher's and students' prior learning and understanding of the areas of instruction. The Model, which begins with a visual schematic for constructing knowledge, demonstrates what the learner is doing and not what the teacher is doing.

Setting the standards of excellence begins with examining the ingredients, i.e., S.A.C.K. Model: starting with the simplest skills and proceeding to the most complex; simplest sets of sensory input to more complex emotions; attitudes formation developing from the sensory input to more complex patterns of thought; basic concept(s) related to the activity or topic to more sophisticated ideas; and simple knowledge (rote memory) to more complex, integrated learning.

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In doing this exercise, four things are essential:

1. Sensory input (e.g., Gardner's Multiple Intelligences)
2. Processing (e.g., Hyerle's Thinking Maps)
3. Retrieval (e.g., Thinking Maps and transference to other lessons)
4. Application (e.g., making connections, metacognition)

Another important step in this process is to ponder what criteria or what assessment techniques might be useful in evaluating learning. There are at least three ways to look at this:

1. Scoring rubric - requires multiple levels of understanding, such as:

    a) Beginning or Novice Level
    b) Apprentice Level
    c) Journeyman Level
    d) Master Level
    e) Artist/Synthesist Level

2. Benchmarks - ingredients of achievement based on progress towards standards

3. Criteria - What are the criteria for each standard?

Perhaps a brief description of each of the scoring rubrics will illustrate the importance of these stages of expertise, and the critical elements of understanding related to the thinking that is required in the development of this type of assessment technique.

The Beginner/Novice Level describes the emergent learner. In this developmental stage, the learner's critical skills are shaped and nurtured. This is the phase at which the learner observes the model, places the model in context, but has not integrated the model. The lowest levels of skill, such as motor coordination, are connected to the pieces of information and understood as the building blocks. A series of questions, experiments, and copying are explored. At this critical point the learner "can do" attitude is developed.

At the Apprentice Level, the learner begins to integrate the model. Integration is recognized by the learner's deepening ability to apply and practice complex procedures and processes in alignment with the model. The learner's increased observation skills attend to more detail related to the task. The learner becomes more aware of the standards and judgment required to form the basis of skillful performance or deep understanding.

While at the Journeyman Level, the learner replicates the standards, (i.e., uses the skills, affects/attitudes, concepts, and knowledge leading to quality standards), related to the products, procedures, and processes. The learner at this level becomes an instructor, i.e., works with others, problem-solves, understands the relationship of parts to the whole, and articulates key skills, affects/attitudes, concepts, and knowledge.

When the learner reaches the Master Level, he/she performs all associated skills, affects/attitudes, concepts, and knowledge associated with the expected standards of excellence. The learner manipulates with fluency and effectiveness new applications with a depth of experience required to adapt the skills, affects/attitudes, concepts, and knowledge to new situations and tasks.

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Finally, at the Artist/Synthesist Level, the learner has integrated all the skills, affects/attitudes, concepts, and knowledge to the craft with depth, fluency and personal style. The learner integrates the skills, affects/attitudes, concepts, and knowledge and applies them to the processes and procedures in new and unusual ways. The learner articulates, bridges or connects, and integrates methodologies and complex problems with their interrelationships to new situations and paradigms. This life-long learner reconceptualizes how the parts fit together, and is able to design and express the synthesis of and integration of the whole picture.

The Model supports teachers and students in intentionally designing learning activities and processes across standards. Teachers and students are able to gain insights into their thinking processes and misconceptions. High order thinking questions may be raised with a realistic expectation that students have the "habits of mind" to analyze them.

What emerges from this model is information about the student's thinking processes, which differs greatly from student to student. We may assume, for example, that most students learn sequentially; however, with the S.A.C.K. Model we discover that many students leap from one interest to another with increased productivity. With this information, we are equipped to discuss with the students the fact that their existing knowledge and experience can be integrated into other learning through their own unique thinking and reasoning patterns, and their ability to make connections.

Integrating a Native Cultural Activity

How this model works in integrating a Native cultural activity can best be explained by examining Table 1.0 S.A.C.K. Model Development (Performance Project).

A group of educators was asked to select a cultural project that someone or some group of people had in common, where each individual in the group had some level of expertise that ranged from the beginner level to the artist level. One group selected "grass basket making" as the cultural activity. The subsequent process describes how the Table 1.0 "Grass Basket Making" Performance Cultural Project Activity was developed using the S.A.C.K. Alignment Model; and how the "grass basket making" cultural activity was integrated with the school's curriculum and State Content Standards.

The Process

The objective of this exercise was to demonstrate how a Native cultural activity could be integrated into the school's curriculum. The group was asked to brainstorm ideas about what specifically goes into making a "grass basket."

After the brainstorming session, the group was asked to align the ideas with the four areas of the S.A.C.K. Alignment Model. To assist the group in assigning the brainstorming session ideas, the group was asked the following questions:

- What skills do you have to have to do this activity?
- What feelings and attitudes do you have to have?
- What concepts, ideas or theories do you have to have?
- What knowledge "pieces" do you have to have?

The group was then asked to determine what curriculum content areas best fit in each of the four areas of the S.A.C.K. Model, (i.e., skills, affect/attitudes, concepts, and knowledge), and to align them. The next step was for the group to link the Native cultural performance-based activity (i.e., "grass basket making) to State Content Standards. (See Table 1.0.)

At this point, the group was provided with additional information regarding teaching topics and objectives. They discussed which instructional strategies would best align with the assessment techniques and State Content Standards. (See Tables 1.1, 1.2, and 1.3.)

Lastly, the group was asked to select an assessment technique from those discussed in the previous steps (i.e., scoring rubric, benchmarks, and criteria) that would best fit the Native cultural performance activity.

Continuation of the Process

Three tables were developed as a result of the Table 1.0 S.A.C.K. Model Development (Performance Project): "Grass Basket Making." These are examples of how educators could make schooling relevant and challenging. They are as follows:

1. Table 1.1 Biology of Grasses
2. Table 1.2 Science of Grasses
3. Table 1.3 Mathematics of Grasses

Each table is described to illustrate further how the Native cultural activity, "grass basket making," could be integrated into the school's instruction strategies.

- Table 1.1 Biology of Grasses: Since grasses are affected by the "forces of nature," it became apparent that the best approach to integrating "grass basket making" with the curriculum was to review the science curriculum and instructional strategies used to teach the lessons specific to the biology of plants, and to choose the appropriate State Content Standards that are closely linked to the particular teaching topic or objective listed in the table. For example:

  ⇒ Linking the grasses used in basket making to the Seasonal Cycles, and to the "forces of nature."
  ⇒ Aligning the "local knowledge" with the types of grasses used.
  ⇒ Connecting the grasses to the "diversity of life and ecosystems."
  ⇒ Associating the grasses and the "interdependence" of the Native Ways with nature, culture and science.

- Table 1.2 Science of Grasses: It is a widely known fact that science is intricately woven into all aspects of life; and that the seasonal cycles and life cycles of plants, animals and human beings affect the development of local knowledge and scientific knowledge. This body of knowledge and the interdependence of all living things are integrated into the Native Way of life and could be easily woven into the school's curriculum. For example:

  ⇒ Linking the grasses with "scientific investigations" and with local Native knowledge to increase understanding of both Ways of Knowing and Learning.
  ⇒ Aligning the grasses with the "process of science" and with cultural learning ways.
  ⇒ Connecting the grasses to "understanding scientific principles" and to local beliefs, values and common sense approaches.

- Table 1.3 Mathematics of Grasses: Many indigenous societies have their own traditional counting and measuring systems. In nature there are a variety of patterns and designs, many of which the Native people use in their crafts, arts, clothing, tools and artifacts. Grass Basket Making has become a part of the economy for Native village survival in contemporary times. Mathematics plays a major role in traditional life as well as in the modern ways of living. For example:

    ⇒ Linking grasses and basket making to "pattern relationships" and Native culture.
    ⇒ Aligning grasses and basket making with "formulating questions about data" and cultural knowledge to make useful and meaningful predictions.
    ⇒ Connecting grasses and basket making with the "development and application of strategies to solve a variety of problems."
    ⇒ Associating grasses and basket making with the "uses of math in daily life."

Conclusions

The S.A.C.K. Alignment Model is one way to link assessment, curriculum and instruction reform and Native student achievement. Children and youths enter school with skills, affects/attitudes, concepts, and knowledge (S.A.C.K) that directly relate to their culture. Many cultural activities that the children and youths are involved in at home or in their communities could be linked to the school's curriculum, to effective instruction, and to multiple alternative assessment techniques.

The "Grass Basket Making" example offers a suggestion on how one cultural activity could be connected with the content areas across the curriculum. The activity is an integrated learning process. The final product, i.e., the Grass Basket, can be evaluated using the definitions described in a scoring rubric. Learning benchmarks can be produced; and/or a set of criteria created in collaboration with the community Grass Basket Maker experts. Because the skills, affects/attitudes, concepts, and knowledge are integrated into the activity, the educator would systematically align instructional techniques with the challenging district's and State's Content Standards. "Grass Basket Making" is a meaningful example of how a teacher could meet the challenging high quality standards required in the Improving America's Schools Act, 1994.

Teachers, parents and students work in partnership when using the S.A.C.K. Alignment Model. The doors are open to many exciting possibilities in learning. To make a project such as this work, schools, teachers, parents and students must reach out to each other. The Native community could provide the cultural expertise, and the educators the structure and framework for such a project to work well.

Recommendations

The following recommendations may be helpful:

1. Promote parent involvement by encouraging the Parent Advisory Committees to become actively committed in their communities.
2. Have the Parent Advisory Committee make recommendations regarding Native culture experts.
3. Form a Native culture curriculum framework committee in your school or district.
4. Offer teachers at each level an opportunity to serve on a Native culture curriculum framework committee to develop instructional strategies.
5. Invite all teachers to serve on a building committee to develop assessment techniques specific to the content areas they teach.

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Table 1.0 S.A.C.K. Model Development (Native Cultural Performance Project)

Group #1 Grass Basket Making (Performance-based Activity)		Content Areas (Curriculum)	Related State Content Standards (Outcomes)
Skills:	cutting the grasses recognize types of grass sorting grasses sewing grasses drying it weaving it listening manual dexterity & hand-eye coordination	Biology Weather Chemistry Physical Sciences Math History	• Apply appropriate scientific procedures and techniques • Develop higher order thinking skills • Utilize critical thinking to demonstrate logical and reflective thinking, and problem solving • Apply skill of scientific inquiry, knowledge • Apply math concepts and processes to situations within and outside school • Recognize connections between nonacademic and academic activities based on prior knowledge • Develop vocabulary skills: content, cues, roots, etymology, dialect, concrete and abstract terms
Affect/Attitude:	stress reduction (relaxing to stressful) self-worth accomplishment self-esteem making money cultural values aesthetics	Healthy Life Skills Citizenship Language Arts Economics	• Speak and listen effectively; persuasive speaking; • Identify main points of messages • Engage in personal reflection and self-assessment • Follow directions • Understand and respect the perspectives of others in order to communicate effectively • Think logically and reflectively in order to present and explain positions based on relevant and reliable information • Expand knowledge of peoples and cultures through cultural values and language
Concepts:	Understanding cycles and timing (getting ready) perseverance (sticking with it) completing the project (finishing it)	Biology Physical Sciences Social Studies Geography Language Arts	• Utilize scientific concepts, facts, principles related to cycles; e.g., photosynthesis, nitrogen and seasonal cycles of plants • Analyze and draw inferences from a variety of multicultural readings and experiences to heighten awareness and sensitivity • Develop higher order thinking skills
Knowledge Bits:	types of grasses designs and patterns weaving methodology cultural traditions and customs seasonal cycles places and names	Biology Chemistry Physical Sciences Math Language Arts History Social Studies Geography	• Use technology to locate, select, and manage information • Use technology to explore ideas, solve problems and derive meaning • Understand the dynamic and interactive natural forces that shape our Earth's environments • Utilize, analyze, and explain information about the human and physical features of places and regions

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Table 1.1 Biology of Grasses, Teaching Topics & Objectives and State Content Standards

Content Area	Teaching Topic & Objectives (Instructional Strategies)	Related State Standards (Outcomes)
Biology of Grasses	**Seasonal Cycles:** Wind, Fire, Water, Earth and Spirit **Cycles** • Interview Elders to gather information on how each of these "natural forces" affects grasses. Fall, Winter, Spring and Summer **Cycles** • Discover what happens to grasses and their root systems during these seasons.	• Understanding the *forces of nature* (Natural Forces) upon grasses
	Plants: grasses - cotton grass weed and salt water beach grasses • Dig up the two grasses named above and describe their root systems. • Determine how grasses build soil and slow down erosion. • Describe how these grasses are used in the local culture. • Describe and discuss the types of "grass" baskets and their uses.	• Use science to understand and describe the *local* environment. (Local Knowledge)
	Life **Cycles** of grasses and other life forms within the ecosystem around your school or village • Describe any patterns of similarity and differences in the environment, and the interaction between plants and human life. • List some of the diverse ecosystems on the arctic/subarctic tundra; (on the Taiga or Boreal Forest). • Identify a number of species of animal, birds and plant life.	• Distinguish the patterns of similarity and differences in the living world in order to understand the diversity of life and understand the theories that describe the importance of diversity for species and ecosystems.
	Uses of plants • Determine how the grasses and other plants are used by the village people. • Describe the interdependent relationship the Native people have with the living environment. Give some specific examples, such as plants, animals, etc. • Discuss the effects of human encroachment upon the environment and its species	• Understand: 1. the interdependence between living things and their environments; 2. that the living environment consists of individuals, populations, and communities; and 3. that a small change in a portion of an environment may affect the entire environment. (Interdependence)

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Table 1.2 Science of Grasses, Teaching Topics & Objectives, and State Content Standards

Content Area	Teaching Topic & Objectives (Learning Activities)	State Standards (Outcomes)
Science of Grasses	**Seasonal Cycles:** Wind, Fire, Water, Earth and Spirit Cycles • Interview village Elders to gather cultural information on the five elements and describe how the natural events such as tides, weather, seasons, and moon phases affect the environment surrounding the grasses. Fall, Winter, Spring and Summer Cycles • Describe ways the seasons affect the life and growth of grasses and other plants. • Name and describe the seasonal cultural activities. • Compare and contrast the seasonal activities of Natives and nonNatives by interviewing a sample of the people in the village and the school staff.	• Understand observable natural events such as tides, weather, seasons, and moon phases in terms of the structure and motion of Earth. • Understand that society, culture, history, and environment affect the development of scientific knowledge. • Understand that acceptance of a new idea depends upon supporting evidence and that new ideas that conflict with beliefs or common sense are often resisted.
	Plants: grasses - cotton grass weed and salt water beach grasses • Design an experiment that demonstrates the gravitational effects on roots and shoots of plants. • Analyze ways plants respond to environmental stimuli, such as light and gravity. What type of plant movement is stimulated by light? • Determine what plants and how some plants are sensitive to touch. • Describe what is meant by the circadian rhythm and its relationship to plants.	• Understand the strength and effects of forces of Nature, including gravity, light and electromagnetic radiation. • Design and conduct scientific investigations using appropriate instruments.
	Cell Energy - the life cycles of plants: grasses - cotton grass weed and salt water beach grasses • Compare respiration and photosynthesis. • Describe the functions of light energy and chlorophyll in photosynthesis. • Describe why photosynthesis is important to plant life. • Describe light and dark reactions. • Compare photosynthesis and chemosynthesis.	• Understand the scientific principles and models that: 1. describe the nature of physical, chemical, and nuclear reactions. 2. state that whenever energy is reduced in one place, it is increased somewhere else by the same amount 3. state that whenever there is a transformation of energy, some energy is spent in ways that make it available for use. • Understand that living things are made up of mostly of cells and that all life processes occur in cells. • Use the process of science; these processes include observing, classifying, measuring, interpreting data, inferring, communicating, controlling variables, developing models and theories, hypothesizing, predicting and experimenting. • Understand that scientific inquiry often involves different ways of thinking, curiosity, and the exploration of multiple paths.

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Table 1.3 Mathematics of Grasses, Teaching Topics & Objectives, and State Content Standards

Content Area	Teaching Topic & Objectives (Learning Activities)	Related State Standards (Outcomes)
Mathematics of Grasses	**Seasonal Cycles:** Wind, Fire, Water, Earth and Spirit **Cycles** • Interview village Elders to gather information on how Native societies deal with and understand the irregularities of Nature. • Interview village Elders and report how Nature's designs and patterns are connected to the culture. • Determine how the Five Elements named above can be used in studying math. • Choose one of the Five Elements and formulate questions that would lead to collecting, organizing, analyzing data to make some predictions with some certainty about a particular event. For example, weather. How would weather be affected by the five elements? Fall, Winter, Spring and Summer **Cycles** • Describe "getting ready" in terms of the seasonal cycles. For example: What activities go on in the village at different seasons? What are the people "getting ready" for? • Describe how math is used in the seasonal cycles. How do the people know when they have enough gathered for the winter?	• Understand mathematical facts, concepts, principles, and theories. • Represent, analyze, and use mathematical patterns, relations, and functions using appropriate methods such as tables, equations, and graphs. • Construct, draw, measure, transform, compare, visualize, classify, and analyze the relationships among geometric figures. • Collect, organize, analyze, interpret, represent, and formulate questions about data and make reasonable and useful predictions about the certainty, or impossibility of an event.
	Plants: grasses - cotton grass weed and salt water beach grasses • Observe and collect data on how the seasonal changes affect the cotton grass weed and the salt water beach grasses. • Write and explain your findings in a journal. You may want to make drawings, charts and/or graphs to represent your data. • When the season has changed you may want to make additional observations about the grasses. Continue to represent your findings and record them in the journal. • Present your data and findings regarding your observations to your class and teacher.	• Formulate mathematical problems that arise from everyday situations. • Develop and apply strategies to solve a variety of problems. • Use common sense to help interpret results.
	• Invite an Elder to the classroom to explain and discuss how "grass baskets" were used traditionally. • Describe how economic changes have created a market for Native grass baskets. • Survey the community to determine how the sale of grass baskets have increased the economy of the village. • Collect data and represent the findings, using graphs, charts, tables and/or equations.	• Use math in daily life. • Use math in other curriculum areas.

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